A Facile Strategy for Making Soluble Graphene Sheets on the Cheap by adopting endogenous reducing agent

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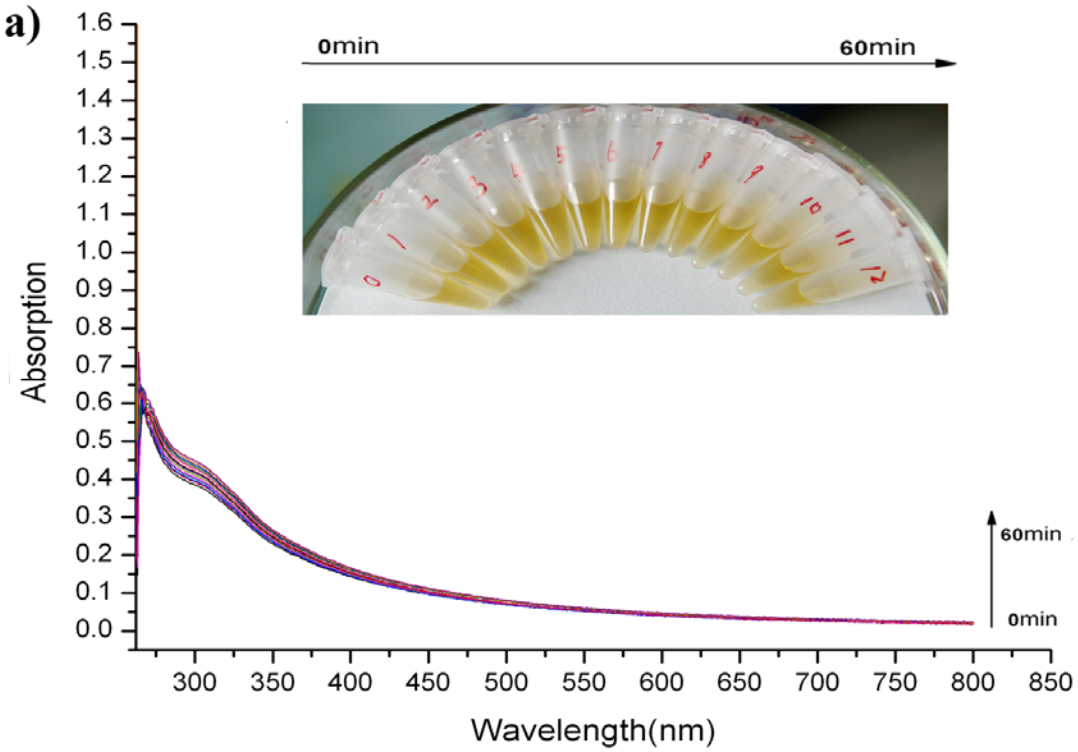
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0min
60min
Absorption
Wavelength(nm)
60min
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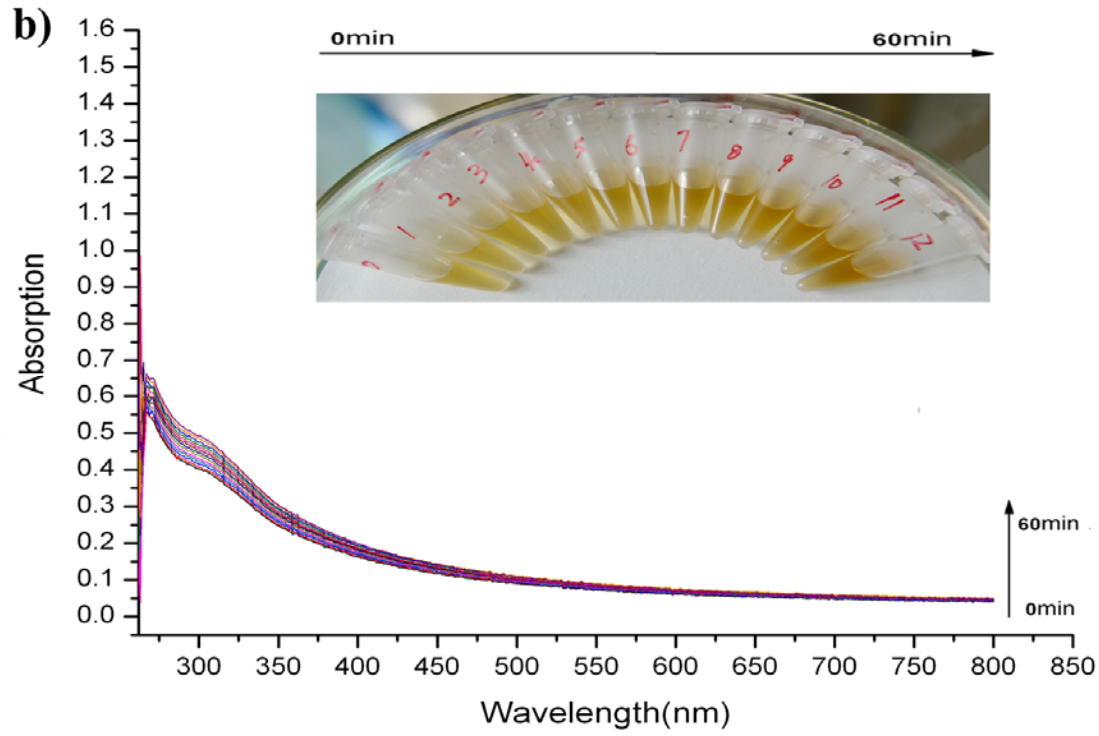
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Wavelength(nm)
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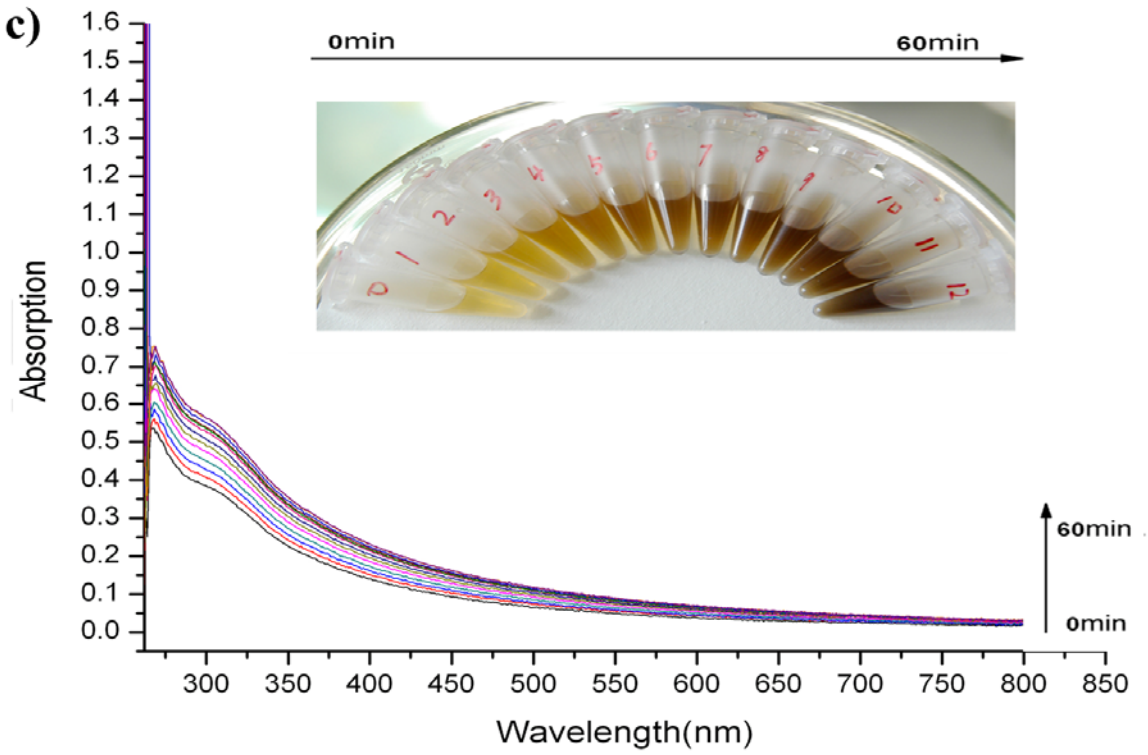

Figure S1. UV-vis absorption spectra of GO dispersions in DMF as function of the reaction time upon heating at a) 60, b) 90, and c) 120 ℃.

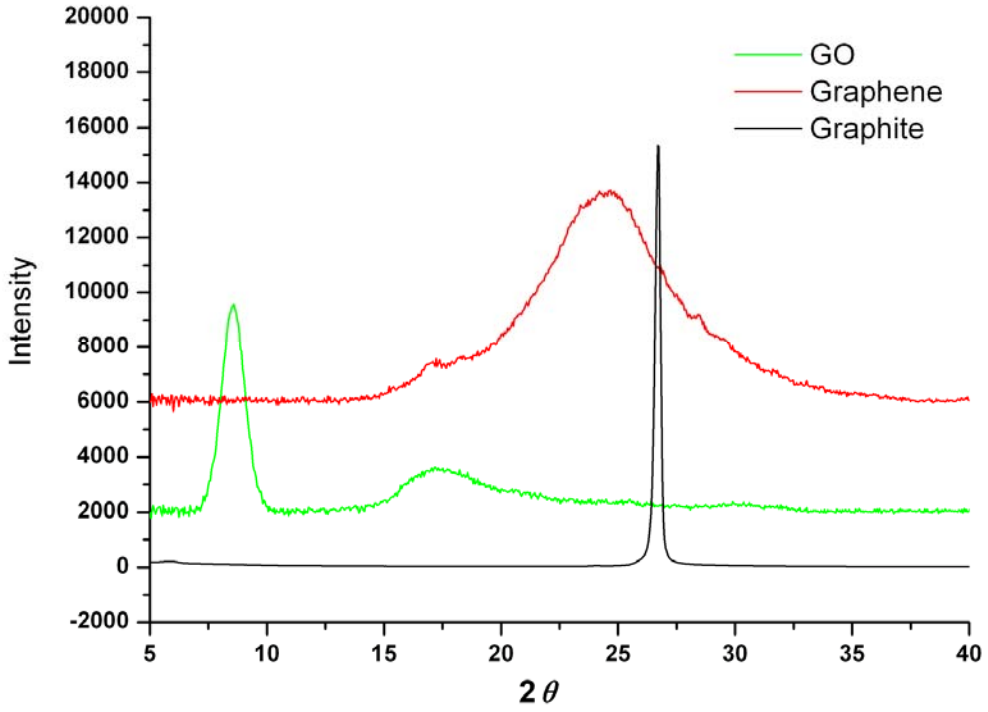

Figure S2. XRD patterns of graphite, GO and graphene.

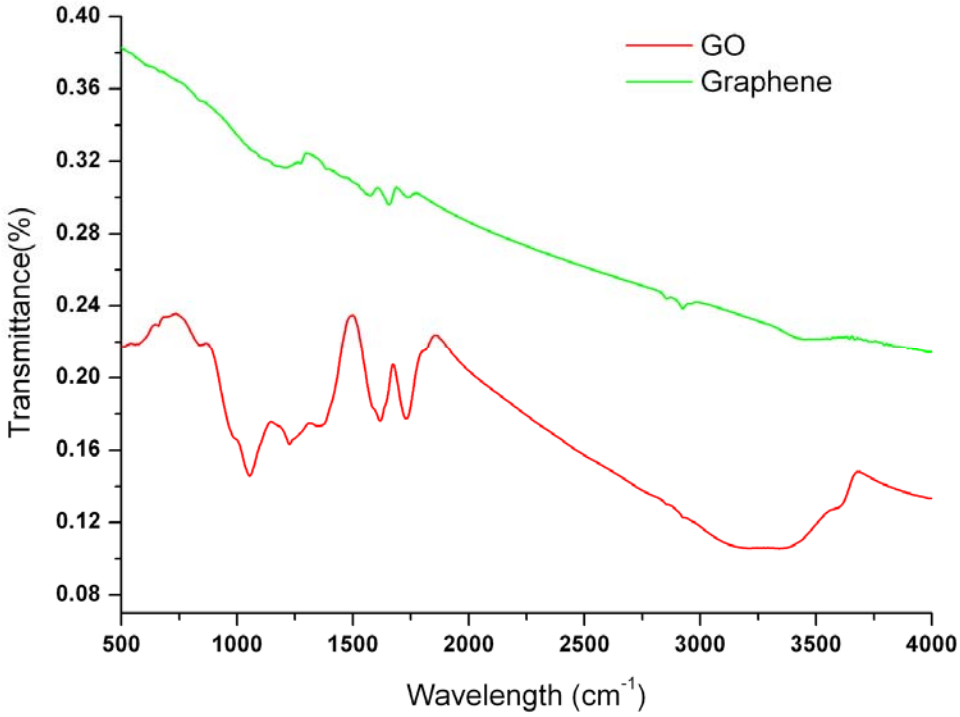

Figure S3. FTIR spectra of GO and graphene. It is found that the spectra of GO shows a rich collection of transmission bands corresponding to carboxylic acid at 1630-1750 cm^{-1}(C=O stretching) , O-H (ν_{O-H} at 3400 and 1395 cm^{-1}), C=C ($\nu_{C=C}$ at 1620 cm^{-1}), and C-O (ν_{C-O} at 1060 cm^{-1}). In contrast, FT-IR spectrum of graphene is essentially featureless except C=C conjugation (1550cm^{-1}) and C-C band (1190 cm^{-1}).

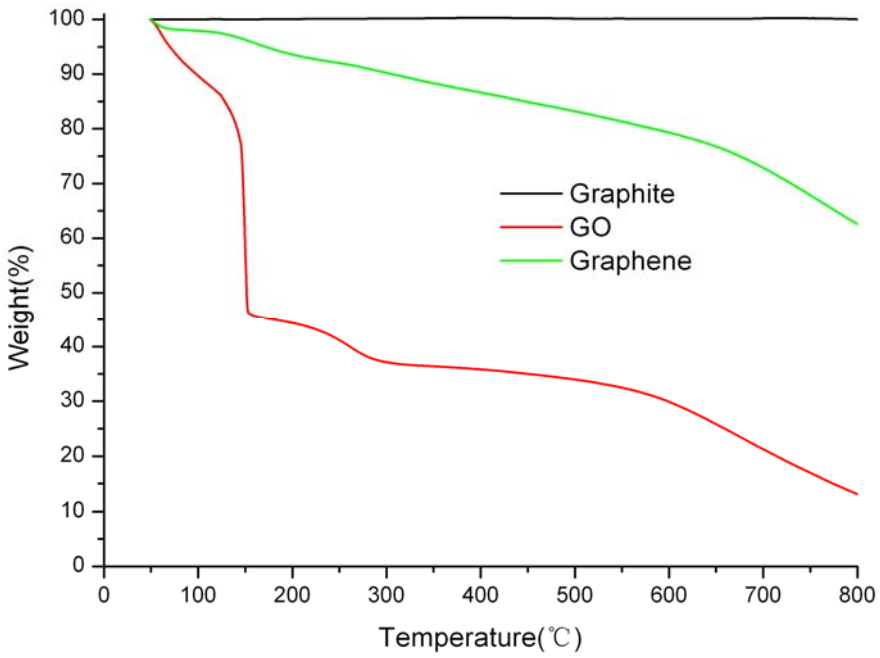

Figure S4. TGA curves of graphite, GO and graphene.

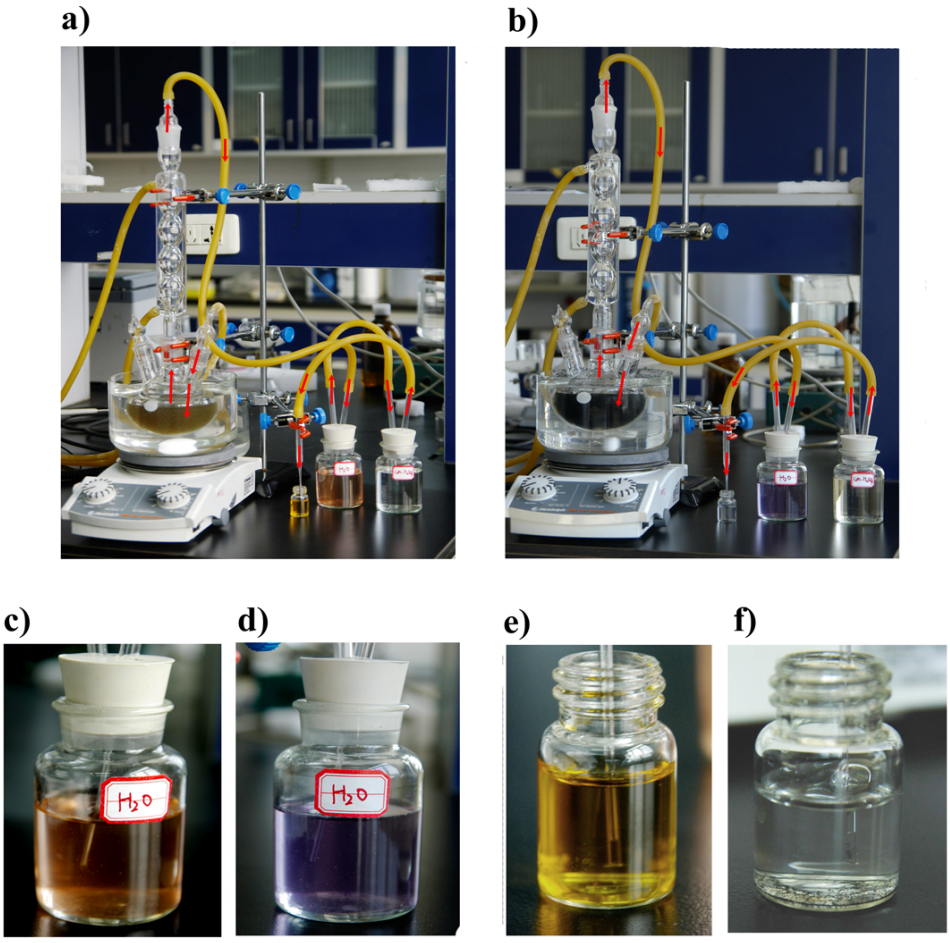

Figure S5. a,b) Digital images of the equipment of identification experiments for the generation of carbon monoxide, the arrowhead represents the direction of gas flow. c,d) color change of the litmus solution before and after the reaction. e,f) change of aqueous solution of $PdCl_2$ before and after the reaction, black precipitates can be observed at the bottom of the bottle.

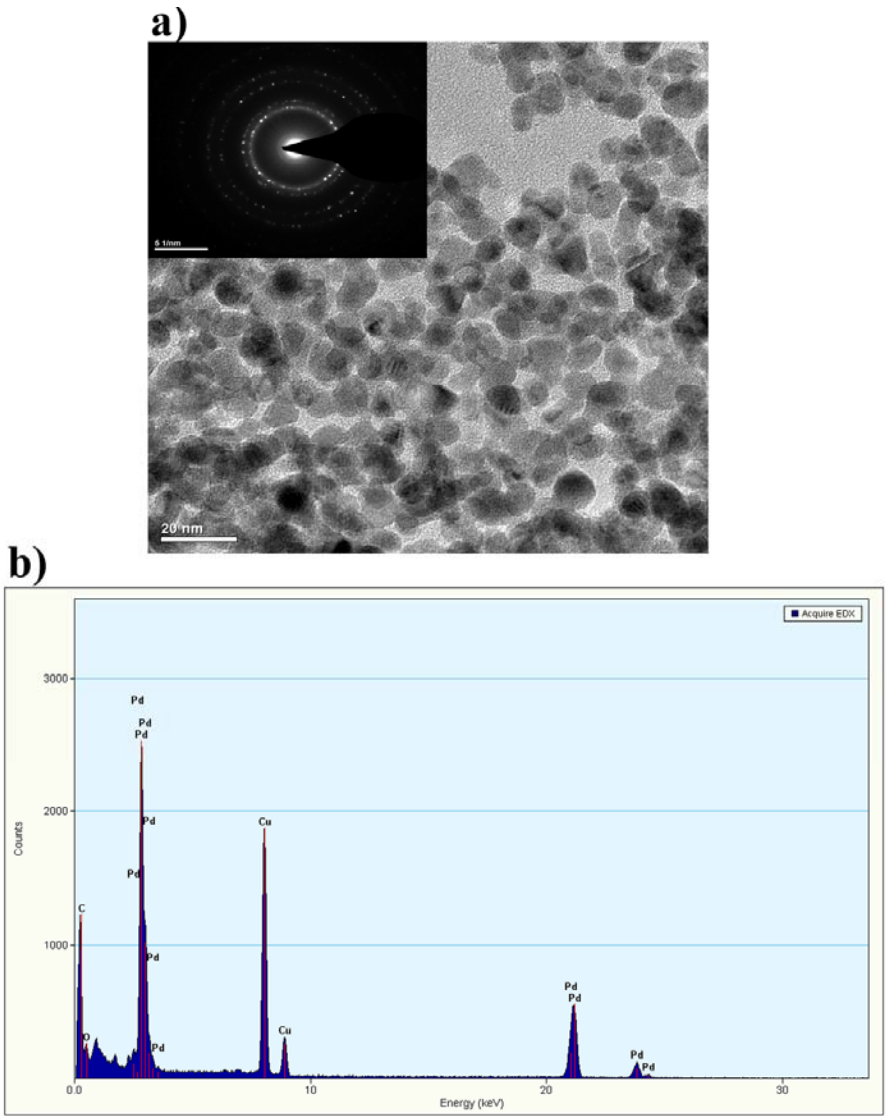

Figure S6. a) TEM image of the resulting black precipitates in the aqueous solution of $PdCl_2$, the inset shows the corresponding selected-area electron diffraction pattern. b) EDAX spectrum of the resulting black precipitates.

Table S1. List of the elemental composition of GO, graphene sheets and hydrazine graphene, measured by Elemental Analysis.

Description	C (weight)%	O (weight) %	N (weight) %	H (weight) %	C/O atom rate
GO[a]	46.96	50.879	0.008	2.873	1.23
Graphene sheets[a]	71.42	20.379	5.134	3.067	4.67
Hydrazine graphene[b]	70.697	26.046	3.226	--------	3.62

[a] air dried, without solvent correction.; [b] with solvent correction, Li, D.; Müller, M. B.; Gilje,S.; Kaner, R. B.; Wallace, G. G. *Nat. Nanotechnol*. **2008**, *3*, 101.